

## \*\*\*\*\*LOAD BALANCER\*\*\*\*\*

Load balancer distributes incoming web traffic across multiple servers to prevent the overload and give the high performance.

There are four types of Load Balancer :

**1)Classical Load Balancer**

**2)Application Load Balancer**

**3)Network Load Balancer**

**4)Gateway Load Balancer**

### **Classical Load Balancer:**

It distribute the traffic at the transport layer (TCP/UDP) level.

### **Application Load Balancer :**

It operates at the application layer (HTTP/HTTPS) to route traffic based on content.

### **Network Load Balancer :**

It directs the traffic at network layer(IP/TCP) to handle high volumes with low latency.

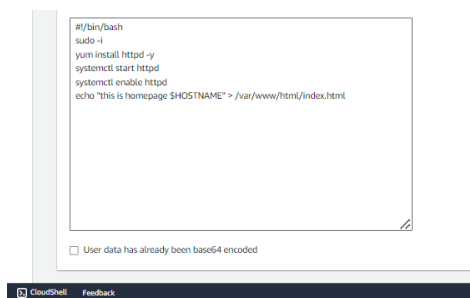
### **Gateway Load Balancer:**

It manages the traffic between virtual private clouds in cloud Environment.

### ### TO CREATE THE INSTANCES FOR LOAD BALANCING###

Step I : go to an Ec2,Launch instances.

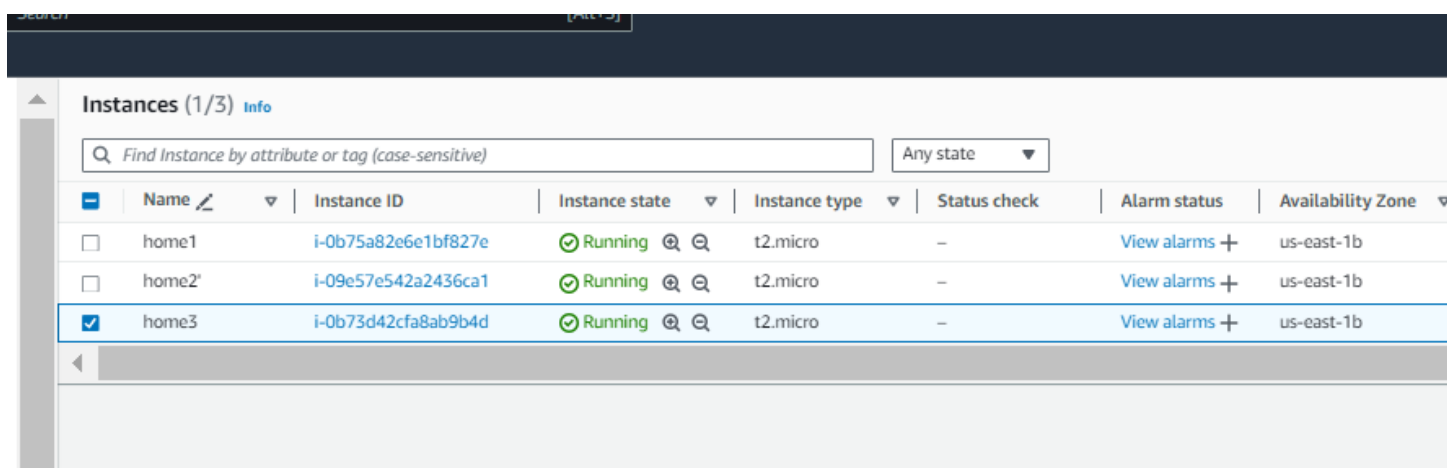
Step II : Launch the Instances for HomePage to allow HTTP traffic and go to Advance Details Add this Script and launch 3 instances at a time and then name them.



```
#/bin/bash
sudo -i
yum install httpd -y
systemctl start httpd
systemctl enable httpd
echo "this is homepage $HOSTNAME" > /var/www/html/index.html
```

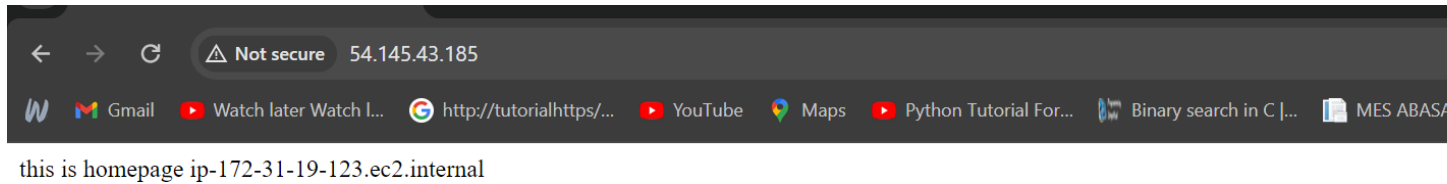
☐ User data has already been base64 encoded

Step III : select any one public IP address and paste it on another browser.

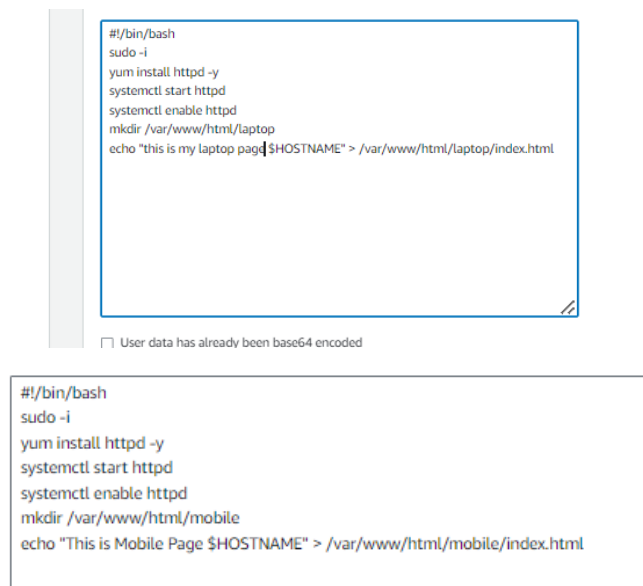


Instances (1/3) <a href="#">Info</a>								
<input type="text" value="Find Instance by attribute or tag (case-sensitive)"/> <span>Any state ▾</span>								
<input type="checkbox"/>	Name <a href="#">↗</a> ▾	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status	Availability Zone ▾	
<input type="checkbox"/>	home1	i-0b75a82e6e1bf827e	Running <a href="#">🔍</a> <a href="#">🔍</a>	t2.micro	–	<a href="#">View alarms</a> <a href="#">+</a>	us-east-1b	
<input type="checkbox"/>	home2	i-09e57e542a2436ca1	Running <a href="#">🔍</a> <a href="#">🔍</a>	t2.micro	–	<a href="#">View alarms</a> <a href="#">+</a>	us-east-1b	
<input checked="" type="checkbox"/>	home3	i-0b73d42cfa8ab9b4d	Running <a href="#">🔍</a> <a href="#">🔍</a>	t2.micro	–	<a href="#">View alarms</a> <a href="#">+</a>	us-east-1b	

Step III : Here see it is work properly.



Step IV : Follow same process for Laptop Page and mobile page add below scripts.



Step V : and launch 2 instances for laptop and 2 for mobile

A screenshot of the AWS Management Console showing a list of EC2 instances. The table includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, Public IPv4 address, Elastic IP, IPv6 IPs, Monitoring, and Security group name. The instances are named mobile1, mobile2, laptop2, laptop1, home1, home2, and home3, all in a 'Running' state.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs	Monitoring	Security group name
mobile1	i-099e20dcbf0152e19	Running	t2.micro	Initializing	View alarms +	us-east-1b	ec2-34-229-146-47.co...	34.229.146.47	-	-	disabled	launch-wizard-2
mobile2	i-0ab8daa8a279f6467	Running	t2.micro	Initializing	View alarms +	us-east-1b	ec2-54-242-11-81.com...	54.242.11.81	-	-	disabled	launch-wizard-2
laptop2	i-0aa7dc49b85ff92eb	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-54-210-48-34.com...	54.210.48.34	-	-	disabled	launch-wizard-2
laptop1	i-053b056b1145a6a50	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-34-228-59-132.co...	34.228.59.132	-	-	disabled	launch-wizard-2
home1	i-0b75a82e6e1bf827e	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-54-172-210-155.co...	54.172.210.155	-	-	disabled	launch-wizard-2
home2	i-09e57e542a2436ca1	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-54-90-249-98.com...	54.90.249.98	-	-	disabled	launch-wizard-2
home3	i-0b73d42cfa8ab9b4d	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-54-145-43-185.co...	54.145.43.185	-	-	disabled	launch-wizard-2

## ### TO CREATE THE TARGET GROUP ###

Step I : In EC2,load Balancing click on Target Group, then click on create target group.

Step II : Choose the target type and give the name to the group give health path as required click on next.

**Create target group**

Step 1: Choose a target type

Step 2: Add instances

Step 3: Add health checks

Step 4: Register target

Name: home

Health path: /

Port: 80

Protocol: HTTP

Interval: 30s

Timeout: 5s

Deregistration protection: Off

Create

**Create target group**

Step 5: Review

Name: home

Health path: /

Port: 80

Protocol: HTTP

Interval: 30s

Timeout: 5s

Deregistration protection: Off

Create

Step III : Then select the Instances and then Create the Target Group.

**Register targets**

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target.

Available instances (5/7)

Filter instances

Instance ID	Name	State
i-09b2dca07f12a19	home1	running
i-0a8a8a8a2f19a47	home2	running
i-0a7b7b7b7b7b7b7	home2	running
i-0a3a3a3a3a3a3a3	home1	running
i-0b7b7b7b7b7b7b7	home1	running
i-0b7b7b7b7b7b7b7	home2	running
i-0b7b7b7b7b7b7b7	home2	running

**Targets (3)**

Filter targets

Show only pending

Remove all pending

Instance ID	Name	Port	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
i-0b75a826e1b8227e	home1	80	running	launch-wizard-2	us-east-1b	172.31.16.135	subnet-011bdea2c5808a49	March 5, 2024, 08:29 (UTC+05:30)
i-09c57c542a2436ca1	home2	80	running	launch-wizard-2	us-east-1b	172.31.19.93	subnet-011bdea2c5808a49	March 5, 2024, 08:29 (UTC+05:30)
i-0b73d42cfa8ab9b4d	home3	80	running	launch-wizard-2	us-east-1b	172.31.19.123	subnet-011bdea2c5808a49	March 5, 2024, 08:29 (UTC+05:30)

3 pending

Cancel

Previous

Create target group

Step IV : Follow the same Process for laptop and Mobile and create the target group.

Step V : Here, The target groups are created.

EC2 > Target groups

Target groups (3) [Info](#) 🔄 Actions

🔍 Filter target groups

<input type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input type="checkbox"/>	<a href="#">mobile</a>	arn:aws:elasticloadbalancing:us-east-1:123456789012:targetgroup/mobile/12345678901234567890123456789012	80	HTTP	Instance	<a href="#">None associated</a>	vpc-0ee2a53913c3112cf
<input type="checkbox"/>	<a href="#">laptop</a>	arn:aws:elasticloadbalancing:us-east-1:123456789012:targetgroup/laptop/12345678901234567890123456789012	80	HTTP	Instance	<a href="#">None associated</a>	vpc-0ee2a53913c3112cf
<input type="checkbox"/>	<a href="#">home</a>	arn:aws:elasticloadbalancing:us-east-1:123456789012:targetgroup/home/12345678901234567890123456789012	80	HTTP	Instance	<a href="#">None associated</a>	vpc-0ee2a53913c3112cf

### ###Create the Load Balancer ###

Step I : Go to Load Balancer, then click on create the Load Balancer.

Step II : Select the all Regions,and listners and routing give the default action for home.

**Network mapping** [Info](#)

The load balancer routes traffic to targets in the selected subnets, and is accessible with your IP address settings.

**VPC** [Info](#)

Select the virtual private cloud (VPC) for your targets or you can create a new VPC [Create new VPC](#). Only VPCs with an internet gateway are enabled for selection. The selected VPC can't be changed after the load balancer is created. To confirm the VPC for your targets, view your [target groups](#).

🔄

**Mappings** [Info](#)

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer in the VPC are not available for selection.

☒ us-east-1a (us-east-1a)

Subnet

IPV4 address

Assigned by AWS

☒ us-east-1b (us-east-1a)

Subnet

IPV4 address

Assigned by AWS

☒ us-east-1c (us-east-1a)

Subnet

IPV4 address

Assigned by AWS

☒ us-east-1d (us-east-1a)

Subnet

IPV4 address

Assigned by AWS

☒ us-east-1e (us-east-1a)

Subnet

IPV4 address

Assigned by AWS

☒ us-east-1f (us-east-1a)

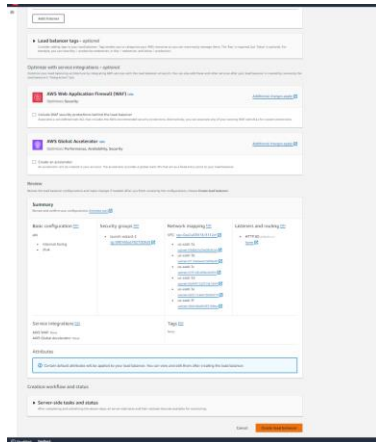
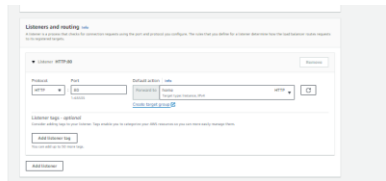
Subnet

IPV4 address

Assigned by AWS

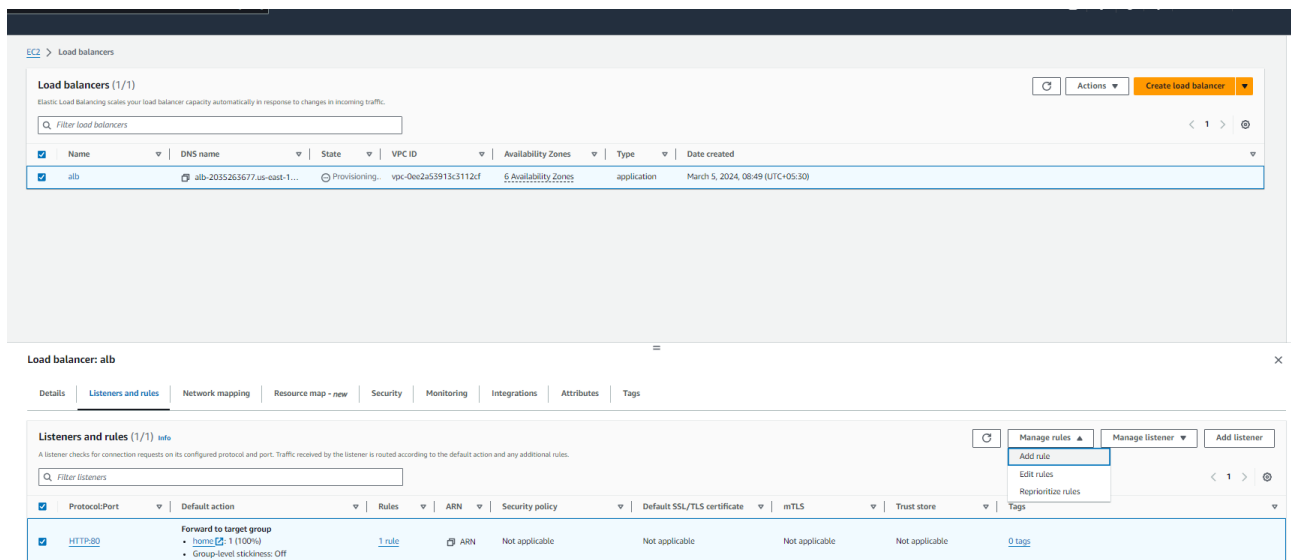
**Security groups** [Info](#)

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can create a new security group [Create new security group](#).



Step II : then click on create load balancer .

Step III : Here, Load Balancer is created select it and go to Listners and rules.click on add rules.



Step IV : Give the names and tags then next.

The screenshot shows the 'Add rule' page in the AWS IAM console. The breadcrumb trail is: EC2 > Load balancers > alb > HTTP-80 listener > Add rule. On the left, a sidebar lists five steps: Step 1: Add rule (selected), Step 2: Define rule conditions, Step 3: Define rule actions, Step 4: Set rule priority, and Step 5: Review and create. The main content area is titled 'Add rule' with a sub-header 'Define the rule and then review it in the context of the other rules on this listener.' Below this, there's a section for 'Listener details: HTTP:80'. The 'Name and tags' section is active, showing a text input field for the 'Name' (containing '1') and a link for 'Add additional tags'. At the bottom right are 'Cancel' and 'Next' buttons.

Step V : Then add Condition,Select here Path and give the path and confirm it.

The screenshot shows the 'Add condition' dialog box. It has a title bar 'Add condition' and a close button. The 'Rule limits' tab is selected. Under 'Rule condition types', a list of options is shown: Path (selected with a checkmark), Host header, HTTP request method, Source IP, HTTP header, and Query string. To the right of the list, there's a text input field for the condition value. Below the list, there's a note: 'Maximum 128 characters. Allowed characters are [a-z], [A-Z], [0-9], the following special characters: [~/\_/~/~/@/~/~].'. At the bottom right are 'Cancel' and 'Confirm' buttons.

This screenshot shows the 'Add condition' dialog box with the 'Path' condition selected. The text input field now contains the value '/laptop'. Below the input field, there's a note: 'Maximum 128 characters. Allowed characters are [a-z], [A-Z], [0-9], the following special characters: [~/\_/~/~/@/~/~].'. There's also a link for 'Add new value'. At the bottom right are 'Cancel' and 'Confirm' buttons.

Step VI : Select the Target Group and then next.

EC2 > Load balancers > alb > HTTP:80 listener > Add rule

Step 1  
[Add rule](#)

Step 2  
[Define rule conditions](#)

Step 3  
**Define rule actions**

Step 4  
Set rule priority

Step 5  
Review and create

### Define rule actions [info](#)

These actions will be applied to requests matching the rule conditions.

► Listener details: HTTP:80

**Actions**

**Action types**

**Routing actions**

☒ Forward to target groups ☐ Redirect to URL ☐ Return fixed response

Forward to target group [info](#)  
Choose a target group and specify routing weight or [Create target group](#)

**Target group**

laptop HTTP  Weight: 1 Percent: 100%  
Target type: instance, ip, or

You can add up to 4 more target groups.

**Group-level stickiness** [info](#)  
If a target group is sticky, requests routed to it remain in that target group for the duration of the session. Individual target stickiness is a configuration of the target group.

☐ Turn on group-level stickiness

Step VII : Review it and click on create.

EC2 > Load balancers > alb > HTTP:80 listener > Add rule

Step 1  
[Add rule](#)

Step 2  
[Define rule conditions](#)

Step 3  
[Define rule actions](#)

Step 4  
[Set rule priority](#)

Step 5  
**Review and create**

### Review and create

► Listener details: HTTP:80

**Rule details: y**

Priority	Conditions (If)	Actions (Then)
2	If request matches all: • Path Pattern is /mobile/	Forward to target group • mobile (1 (100%)) • Group-level stickiness: Off

Rule ARN: Pending

**Rule tags (1)**

Tags can help you manage, identify, organize, search for, and filter resources.

Key	Value
Name	y

Step VIII : follow the same process to add the rule for mobile.

Step IX : here, the Listener rules are added

HTTP:80 [info](#)

▼ **Details**

A listener checks for connection requests using the protocol and port that you configure. The default action and any additional rules that you create determine how the Application Load Balancer routes requests to its registered targets.

Protocol/Port HTTP:80	Load balancer <a href="#">alb</a>	Default actions <b>Forward to target group</b> • home (1 (100%)) • Group-level stickiness: Off
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Listener ARN  
arn:aws:elasticloadbalancing:us-east-1:76739790913:listener/app/alb/f70902346b0d0ad9/cb573198ba36dbc

**Rules** | **Tags**

**Listener rules (3)** [info](#)

Traffic received by the listener is routed according to the default action and any additional rules. Rules are evaluated in priority order from the lowest value to the highest value.

<input type="checkbox"/>	Name tag	Priority	Conditions (If)	Actions (Then)	ARN	Tags
<input type="checkbox"/>	x	1	Path Pattern is /laptop/	Forward to target group • laptop (1 (100%)) • Group-level stickiness: Off	ARN	1.100
<input type="checkbox"/>	y	2	Path Pattern is /mobile/	Forward to target group • mobile (1 (100%)) • Group-level stickiness: Off	ARN	1.100
<input type="checkbox"/>	Default	Last (default)	If no other rule applies	Forward to target group • home (1 (100%)) • Group-level stickiness: Off	ARN	0.100



# Step X : See here instances are healthy in target group

Details

**Targets**

Monitoring

Health checks

Attributes

Tags

Registered targets (3) Info

Anomaly mitigation: **Not applicable**

Filter targets

	Instance ID	Name	Port	Zone	Health status	Health status details	Launch time
<input type="checkbox"/>	<a href="#">i-09e57e542a2436ca1</a>	home2	80	us-east-1b	Healthy	-	March 5, 2024, 08:29 (UTC+05:30)
<input type="checkbox"/>	<a href="#">i-0b75a82e6e1bf827e</a>	home1	80	us-east-1b	Healthy	-	March 5, 2024, 08:29 (UTC+05:30)
<input type="checkbox"/>	<a href="#">i-0b73d42cfa8ab9b4d</a>	home3	80	us-east-1b	Healthy	-	March 5, 2024, 08:29 (UTC+05:30)

Details

**Targets**

Monitoring

Health checks

Attributes

Tags

Target group: laptop

Registered targets (2) Info

Anomaly mitigation: **Not applicable**

Filter targets

	Instance ID	Name	Port	Zone	Health status	Health status details	Launch time
<input type="checkbox"/>	<a href="#">i-053b056b1145a6a50</a>	laptop1	80	us-east-1b	Healthy	-	March 5, 2024, 08:34 (UTC+05:30)
<input type="checkbox"/>	<a href="#">i-0aa7dc49b85ff92eb</a>	laptop2	80	us-east-1b	Healthy	-	March 5, 2024, 08:34 (UTC+05:30)

AMI Catalog

▼ Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

▼ Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

▼ Load Balancing

Load Balancers

**Target Groups**

Trust Stores New

Target group: mobile

Registered targets (2) Info

Anomaly mitigation: **Not applicable**

Filter targets

	Instance ID	Name	Port	Zone	Health status	Health status details	Launch time
<input type="checkbox"/>	<a href="#">i-099e20dcfb0152e19</a>	mobile1	80	us-east-1b	Healthy	-	March 5, 2024, 08:40 (UTC+05:30)
<input type="checkbox"/>	<a href="#">i-0ab8daa8a279f6467</a>	mobile2	80	us-east-1b	Healthy	-	March 5, 2024, 08:40 (UTC+05:30)

# Step XI : Copy the DNS link of Load Balancer and paste it in other browser.

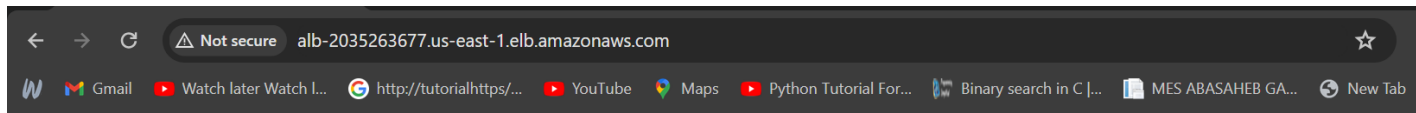
EC2 > Load balancers

Load balancers (1/1)

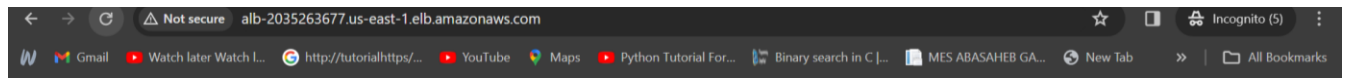
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Filter load balancers

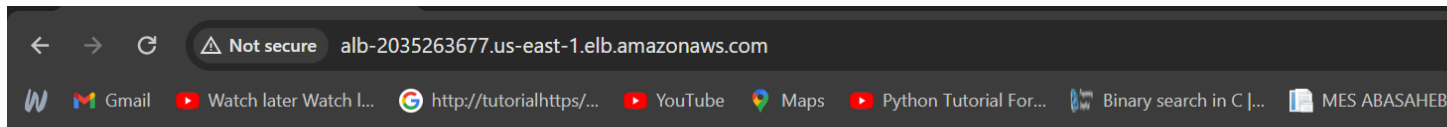
<input checked="" type="checkbox"/>	Name	DNS name copied	State	VPC ID	Availability Zones	Type	Date created
<input checked="" type="checkbox"/>	alb	alb-2035263677.us-east-1...	Active	vpc-0ee2a53913c3112cf	6 Availability Zones	application	March 5, 2024, 08:49 (UTC+05:30)



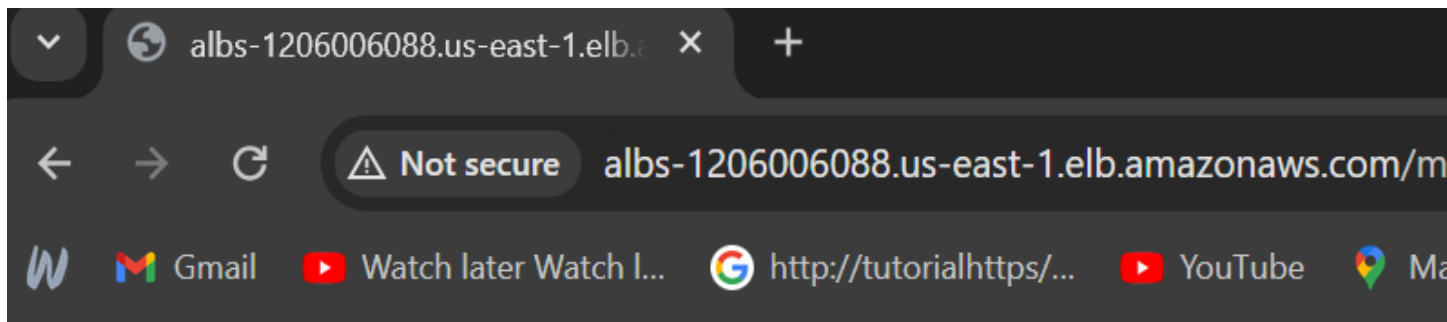
this is homepage ip-172-31-16-135.ec2.internal



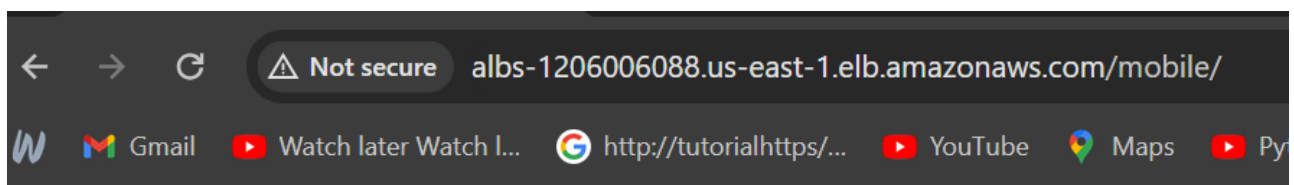
this is homepage ip-172-31-19-93.ec2.internal



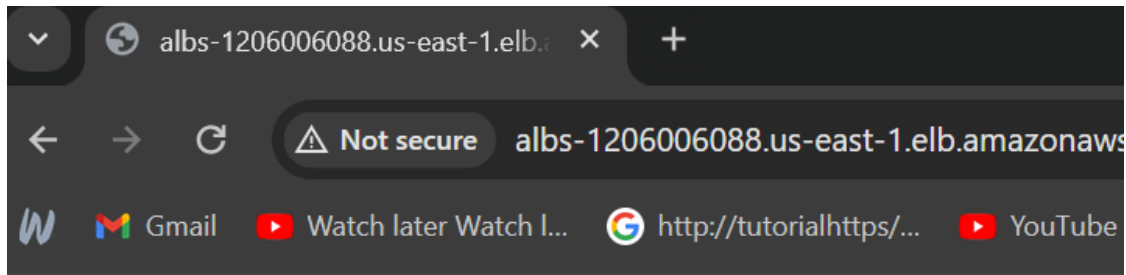
this is homepage ip-172-31-16-135.ec2.internal



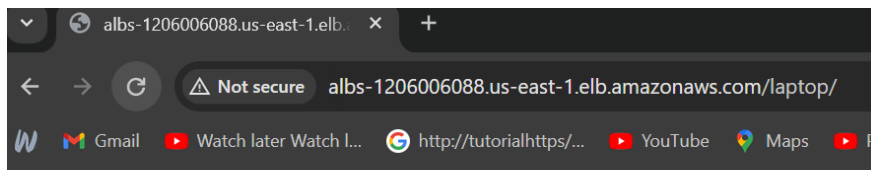
This is Mobile Page ip-172-31-27-14.ec2.internal



This is Mobile Page ip-172-31-27-14.ec2.internal



This is laptop page ip-172-31-36-146.ec2.internal



This is laptop page ip-172-31-40-164.ec2.internal